REMARKS

Claims 1-4 and 19-23 are pending in the instant application. Claims 2, 4, 22 and 23 have been allowed. Claims 1, 3 and 19-21 have been rejected. Claim 23 has been objected to. Claims 1-3, 19-21, and 23 have been amended and claim 4 has been canceled. No new matter has been added by this amendment. Reconsideration is respectfully requested in light of the following remarks.

I. Allowance of Claims

Applicant acknowledges the allowance of 2, 4, 22 and 23. Claim 2 has been amended to independent form and claim 23 has been amended as suggested by the Examiner. Claim 4 has been canceled in view of amendments to claim 1.

II. Election/Restriction Requirement Under 35 U.S.C. §121

The election of Group I claims has been acknowledged and claims 19-23 have been combined with the elected Group insofar as they read on SEQ ID NO:1 and SEQ ID NO:2. The Examiner suggests that SEQ ID NO:3-8 of claim 19 are independent and distinct from each other because they possess differences in structure and function and therefore restriction of examination purposes as indicated is proper.

III. Objection to the Title

The Examiner has objected to the title of the disclosure because it is not descriptive of the present invention. The Examiner suggests amending the title to read: "Nucleic acid molecules encoding human 4-1BB". As suggested, Applicant has

amended the title. Withdrawal of this objection is therefore respectfully requested.

IV. Objection to the Claims

Claim 23 has been objected to because of syntax. The Examiner suggests amending the phrase "which is no SEQ ID NO:2 or the extracellular domain thereof" to read "which is neither SEQ ID NO:2, nor the extracellular domain thereof." Applicant has made the suggested amendment and therefore respectfully requests that this objection be withdrawn.

V. Rejection of Claims Under 35 U.S.C. §112

Claim 3 has been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement as the Applicant's referral to the deposit of NRRL B21131 is an insufficient assurance that all the conditions of 37 CFR sections 1.801 through 1.809 have been met. Accordingly, Applicant submits herewith an Affidavit by the attorney of record stating that the deposit has been accepted by the Agricultural Research Service Culture Collection under accession number NRRL B21131. Applicant also submits herewith a copy of the deposit receipt. It is therefore respectfully requested that this rejection be withdrawn.

Claims 20 and 21 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement and written description requirements. Specifically, the Examiner suggests that while the specification is enabling for polynucleotides of SEQ ID NO:1 encoding the H4-1BB receptor of SEQ ID NO:2, the specification does not reasonably provide

enablement for fragments or less than the full-length of SEQ ID NO:1 which encode H4-1BB receptors. It is suggested that the breadth of the claims is excessive with regard to Applicant's claiming nucleic acids encoding H4-1BB which are less than full-length of SEQ ID NO:1. In particular, the Examiner suggests while claim 21 encompasses a H4-1BB receptor comprising bases 41-598 and 41-805 of SEQ ID NO:1, no guidance or working examples of any protein encoded by any nucleic acid sequence less than full-length SEQ ID NO:1 has been provided. It is suggested that nucleic acid sequences which comprise less than the full-length of SEQ ID NO:1 would have one or more nucleic acid substitutions, deletions insertions and/or additions to the polynucleotide of SEQ ID NO:1 and Applicant has not taught which bases are critical to maintain the functional characteristics of the H4-1BB protein. The Examiner suggests that because the scope of the claims includes numerous variants and the specification does not provide any guidance as to what changes should be made, that the specification fails to identify the common attributes or characteristics of members of the genus. Applicant respectfully traverses these rejections.

Applicant respectfully believes that the rejection of claims 20 and 21 under 35 U.S.C. §112 is improper. The Examiner suggests that nucleic acid sequences comprising bases 41-598 or 41-805 of SEQ ID NO:1 would have one or more nucleic acid substitutions, deletions insertions and/or additions to the polynucleotide of SEQ ID NO:1. Applicant respectfully disagrees. MPEP 2111.03 indicates that the use of the term "comprising" means that the scope of the claim should be interpreted to be open-ended, but

that the named elements (*i.e.*, bases 41-598 or 41-805 of SEQ ID NO:1) are essential.

Furthermore, MPEP 2164.02 indicates that the specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. In re Borkowski, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970).

Further, it would be apparent to one of skill in the art upon reading the disclosure and in particular comparing figures 1 and 2, that polypeptides encoded by bases 41-598 and 41-805 of SEQ ID NO:1 encode amino acids 1-186 (*i.e.*, the extracellular domain) and 1-255 (*i.e.*, the entire coding region), respectively.

Therefore, based on the defined structure and function of nucleic acid sequences comprising bases 41-598 or 41-805 of SEQ ID NO:1, the guidance provided by the instant application, and the level of one of skill in the art of recombinant protein production to produce a recombinant protein encoded by bases 41-598 and 41-805 of SEQ ID NO:1, one of skill in the art could readily make and use the claimed invention. Moreover, the subject matter of claims 20 and 21 is described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention. It is therefore respectfully requested the rejections of claims 20 and 21 under 35 U.S.C. §112 be withdrawn.

Claim 3 has been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner suggests that while the

claim recites that the Deposit is an NRRL Deposit, the specification at page 4, lines 25-28, states that the Deposit is an ATCC Deposit. Applicant respectfully traverses this rejection.

Applicant respectfully wishes to draw the Examiner's attention to page 4, lines 17-19, which indicates that the cDNA identified as pH4-1BB, encoding the human 4-1BB, was deposited at the Agricultural Research Service Culture Collection and assigned the accession number: NRRL B21131. In contrast, the ATCC Deposit assigned accession number 67825 is for the cDNA gene identified as p4-1BB which encodes the murine 4-1BB protein. Accordingly, withdrawal of this rejection is respectfully requested.

VI. Rejection of Claims Under 35 U.S.C. §102

Claims 1 and 19 have been rejected under 35 U.S.C. §102(e) as being anticipated by Goodwin et al. (U.S. Patent No. 5,674,704). The Examiner suggests that Goodwin et al. teach a nucleic acid sequence encoding a protein which is 100% identical to SEQ ID NO:2. Applicant respectfully disagrees.

To facilitate the prosecution of the instant application, Applicant has amended claim 1 to recite an isolated nucleic acid molecule comprising a nucleotide sequence that encodes the extracellular domain of a human receptor protein H4-1BB of SEQ ID NO:2. Applicant submits herewith a copy of a Rule 131 Declaration by Applicant, Byoung Kwon, executed January 3, 2000, which indicates that prior to the effective date of Goodwin et al., Applicant had reduced to practice the production and isolation of the extracellular domain of a human receptor protein H4-1BB comprising SEQ ID NO:2 (see paragraphs 8 and 9). In particular, Applicant demonstrates that the 5′ portion of the H4-1BB cDNA,

including nucleic acids encoding the signal peptide and the entire extracellular domain, was amplified by PCR using two primers termed 5′ (ATA GAT CTA TGG GAA ACA GCT GTT AC) and 3′ (ATA AGC TTC GGA GAG TGT CCT GGC TC). The resulting amplicon was digested with *Bgl*II and *Hind*III (see sheet 1 of Exhibit A), sites which were present in the 5′ and 3′ primer sequences, and subsequently ligated into a *Bgl*II/*Hind*III-digested APtag-1 mammalian expression vector (see sheet 3 of Exhibit A) thereby creating an H4-1BB/human placental alkaline phosphatase fusion molecule. Therefore, having shown primers designed to amplify the extracellular domain of H4-1BB which contain restriction enzyme sites not present in the nucleotide sequence encoding H4-1BB, H4-1BB amplification, and in-frame fusion to alkaline phosphatase, Applicant has demonstrated possession of an isolated nucleic acid molecule comprising a nucleotide sequence that encodes the extracellular domain of H4-1BB prior to the effective date Goodwin et al. It is therefore respectfully requested that the rejection of claims 1 and 19 be withdrawn.

VII. Conclusion

The Applicant believes that the foregoing comprises a full and complete response to the Office Action of record.

Accordingly, favorable reconsideration and subsequent allowance of the pending claims is earnestly solicited.

Respectfully submitted,

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